

Claims

- [c1] 1. A product containing polycrystalline chips that contain nano-crystals and are in the form of particulates, ribbons, wires, filaments and/or platelets, at least a portion of the product having a nanocrystalline microstructure as a result of containing the chips.
- [c2] 2. A product according to claim 1, wherein the chips are formed of a material chosen from the group consisting of metal, metal alloy and intermetallic materials.
- [c3] 3. A product according to claim 1, wherein the chips are formed of an inorganic material chosen from the group consisting of ceramic materials.
- [c4] 4. A product according to claim 1, wherein the chips have grains with a nominal size of less than 500 nm.
- [c5] 5. A product according to claim 1, wherein the chips have grains with a nominal size of less than 100 nm.
- [c6] 6. A product according to claim 1, wherein the product consists essentially of the chips held together by consolidation so that the product consists essentially of a nanocrystalline microstructure.

- [c7] 7. A product according to claim 1, wherein the product contains the chips dispersed in a matrix material.
- [c8] 8. A product according to claim 7, wherein the chips are present in the matrix material in the form of ribbons, wires or filaments.
- [c9] 9. A product according to claim 7, wherein the chips are in the form of platelets.
- [c10] 10. A product according to claim 7, wherein the matrix material is chosen from the group consisting of metal, metal alloy and intermetallic materials.
- [c11] 11. A product according to claim 7, wherein the matrix material is a polymeric material.
- [c12] 12. A product according to claim 7, wherein the matrix material is an inorganic material chosen from the group consisting of ceramic materials.
- [c13] 13. A product consisting essentially of polycrystalline chips held together by consolidation, the chips consisting entirely of grains with a nominal size of less than 500 nm so that the product consists essentially of a nanocrystalline microstructure.
- [c14] 14. A product according to claim 13, wherein the chips

are formed of a material chosen from the group consisting of metal, metal alloy and intermetallic materials.

[c15] 15. A product according to claim 13, wherein the chips are formed of an inorganic material chosen from the group consisting of ceramic materials.

[c16] 16. A product according to claim 13, wherein the grains of the chips have a nominal size of less than 300 nm.

[c17] 17. A product comprising polycrystalline chips dispersed in a matrix material, the chips being in the form of particulates, ribbons, wires, filaments and/or platelets that consist entirely of grains with a nominal size of less than 500 nm.

[c18] 18. A product according to claim 17, wherein the chips are formed of a material chosen from the group consisting of metal, metal alloy and intermetallic materials.

[c19] 19. A product according to claim 17, wherein the chips are formed of an inorganic material chosen from the group consisting of ceramic materials.

[c20] 20. A product according to claim 17, wherein the grains of the chips have a nominal size of less than 300 nm.

[c21] 21. A product according to claim 17, wherein the chips are in the form of particles or platelets.

- [c22] 22. A product according to claim 17, wherein the chips are in the form of ribbons, wires or filaments.
- [c23] 23. A product according to claim 17, wherein the matrix material is chosen from the group consisting of metal, metal alloy and intermetallic materials.
- [c24] 24. A product according to claim 17, wherein the matrix material is a polymeric material.
- [c25] 25. A product according to claim 17, wherein the matrix material is an inorganic material chosen from the group consisting of ceramic materials.